



# Introduction to the ESG-CET CMIP5 Federation

Luca Cinquini  
on behalf of the ESG-CET project  
with thanks to everybody involved

GO-ESSP Meeting, Hamburg, Germany, October 2009



# The Earth System Grid project

---

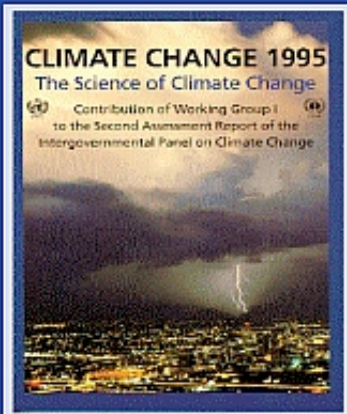
To facilitate the management, distribution and analysis of  
climate model data

To empower scientists in directing policy makers to face the  
challenges of adaption and mitigation of climate change

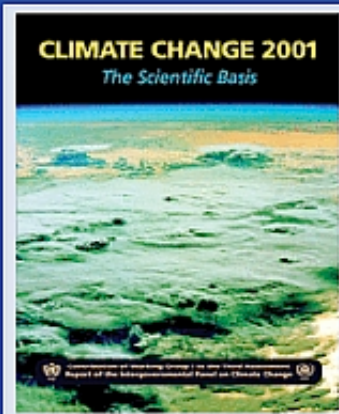


# The Earth System Grid project

To facilitate the management, distribution and analysis of climate model data



"The balance of evidence suggests a discernible human influence on global climate"



"There is new and stronger evidence that most of the warming observed over the last 50 years is attributable to human activities"



"Most of the observed increase in globally averaged temperatures since the mid-20th century is *very likely* due to the observed increase in anthropogenic greenhouse gas concentrations"

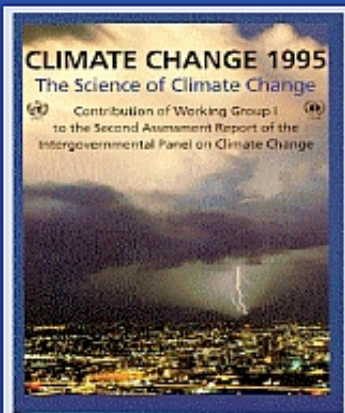
To empower scientists in directing policy makers to face the challenges of adaption and mitigation of climate change



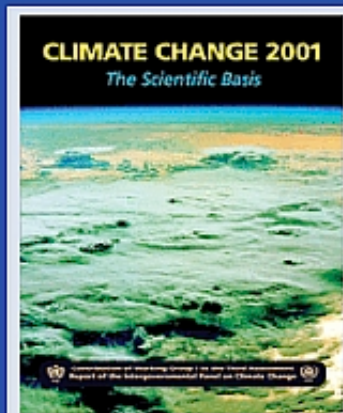
Earth System Grid

# The Earth System Grid project

To facilitate the management, distribution and analysis of climate model data



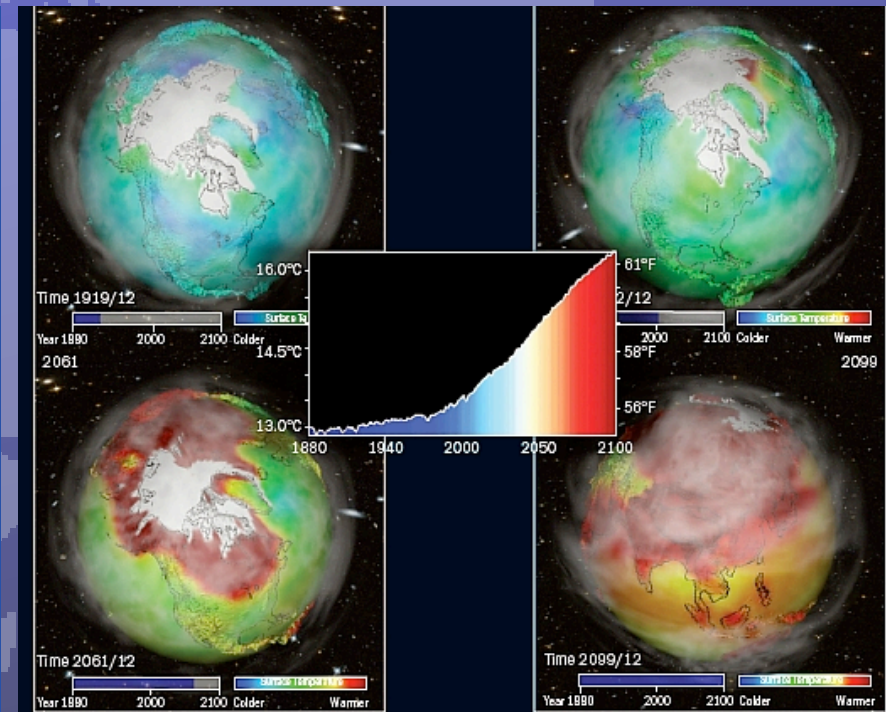
"The balance of evidence suggests a discernible human influence on global climate"



"There is new and stronger evidence that most of the warming observed over the last 50 years is attributable to human activities"



"Most of the observed increase in globally averaged temperatures since the mid-20th century is *very likely* due to the observed increase in anthropogenic greenhouse gas concentrations"

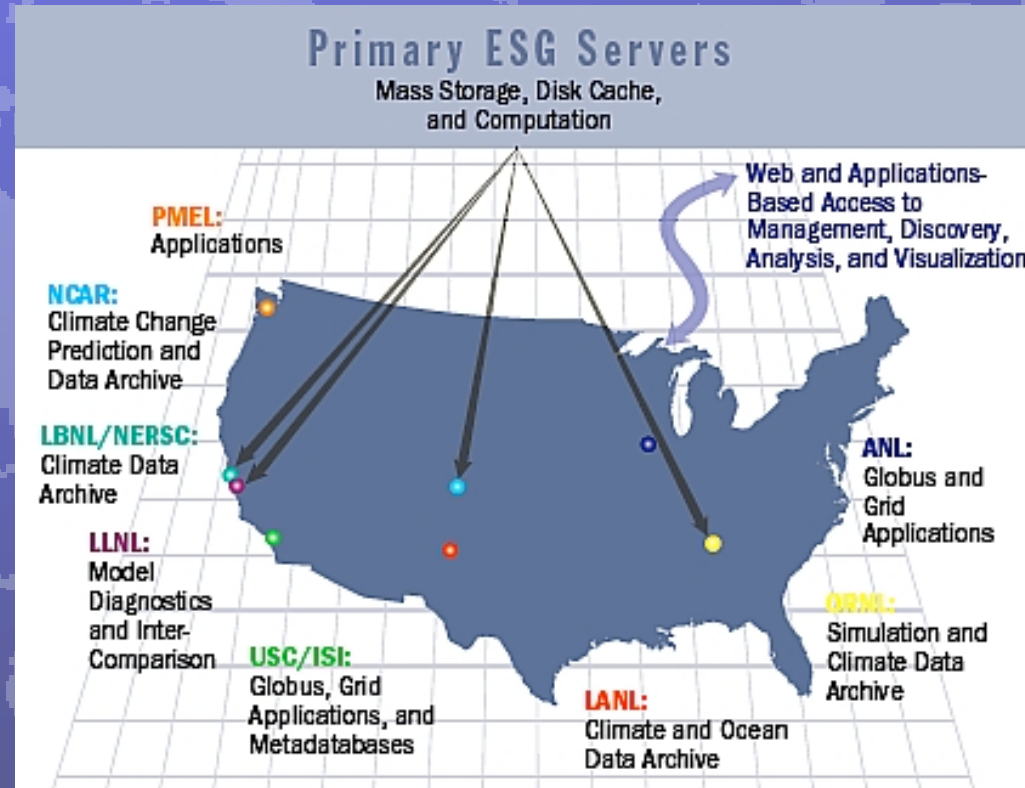


To empower scientists in directing policy makers to face the challenges of adaption and mitigation of climate change



# The Earth System Grid collaboration

- DoE funded: PMEL, NCAR, LBNL, LLNL, ISI, LANL, ORNL, ANL



- Partners: BADC, DKRZ, GFDL, NASA/JPL, Goddard, NOAA GFDL, Curator, Metaphor, ANU, USGS, JAMSTEC, ...



## CMIP5 Challenges

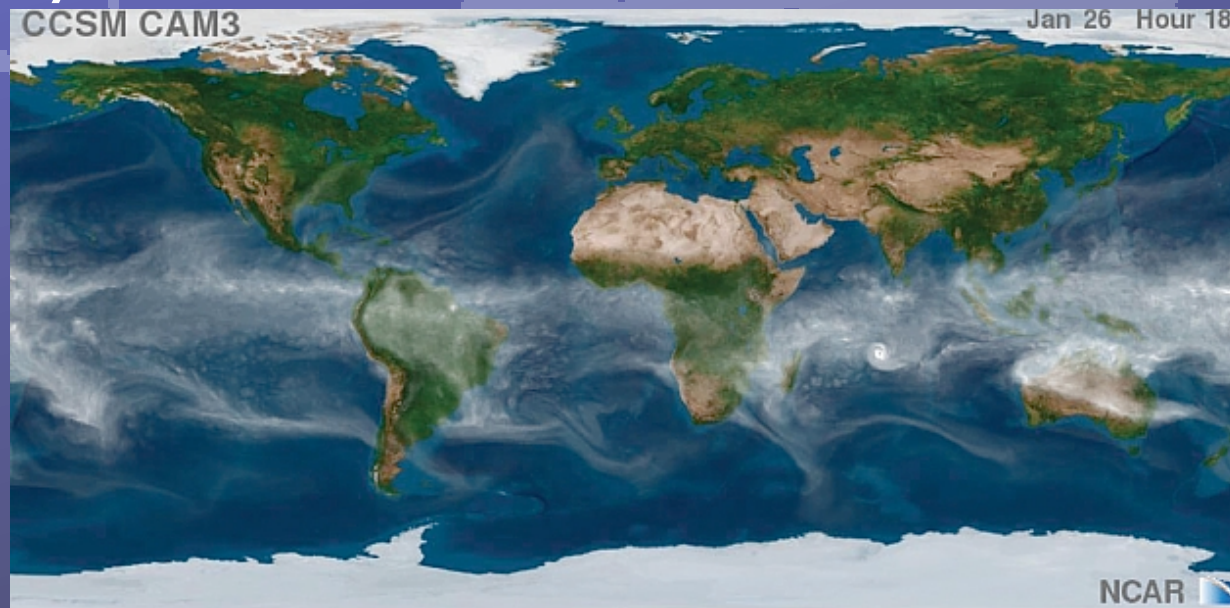
---

- Multiple modeling groups to provide the data (~21)
- Multiple data centers to distribute the data (>3)
- Massive datasets generated at different sites (~PTB)
- Combine models, model output, observations, visualization and analysis tools



# CMIP5 Challenges

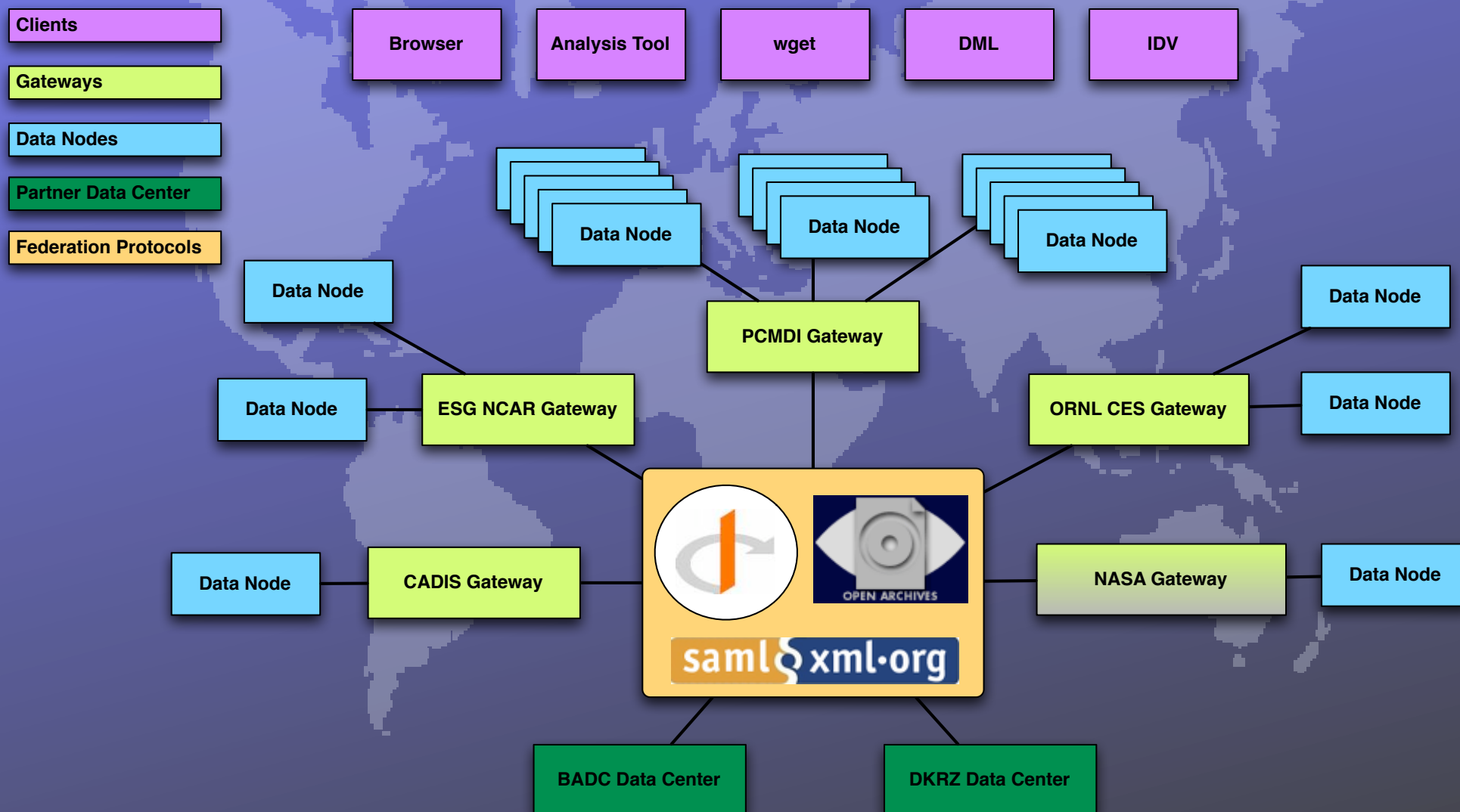
- Multiple modeling groups to provide the data (~21)
- Multiple data centers to distribute the data (>3)
- Massive datasets generated at different sites (~PTB)
- Combine models, model output, observations, visualization and analysis tools





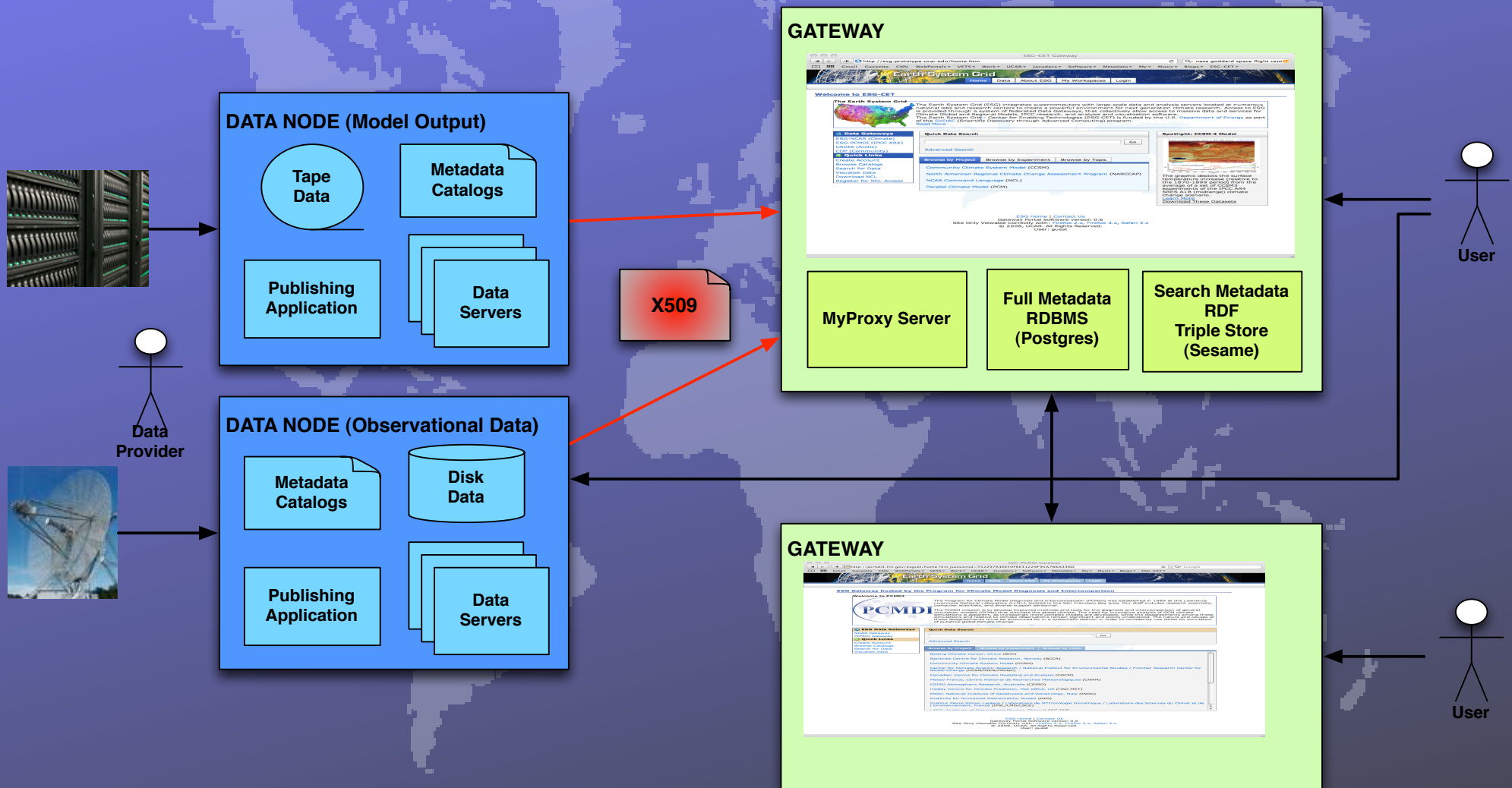
# ESG Federation

Distributed, Federated, Integrated, Extensible





# Data Flow Across ESG Federation



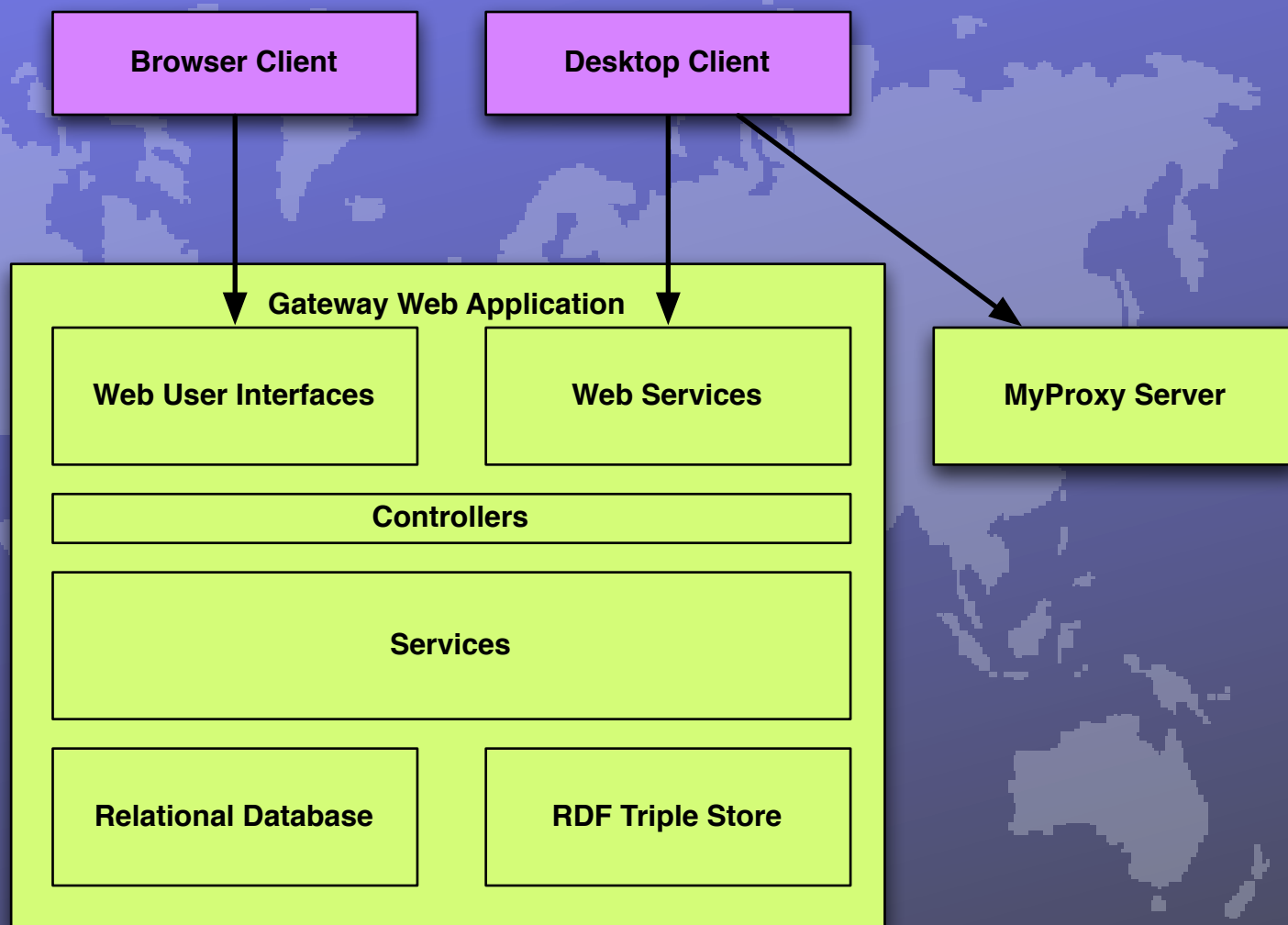


# The ESG Gateway

- Enables and controls data access to multiple Data Nodes
- Federates with other Gateways
- Functionality:
  - Hierarchical browsing of metadata catalogs
  - Semantic faceted search
  - Detailed model description (“track-back”)
  - User registration and group membership
  - Authentication and authorization
  - Metadata exchange



# Gateway Internal Architecture



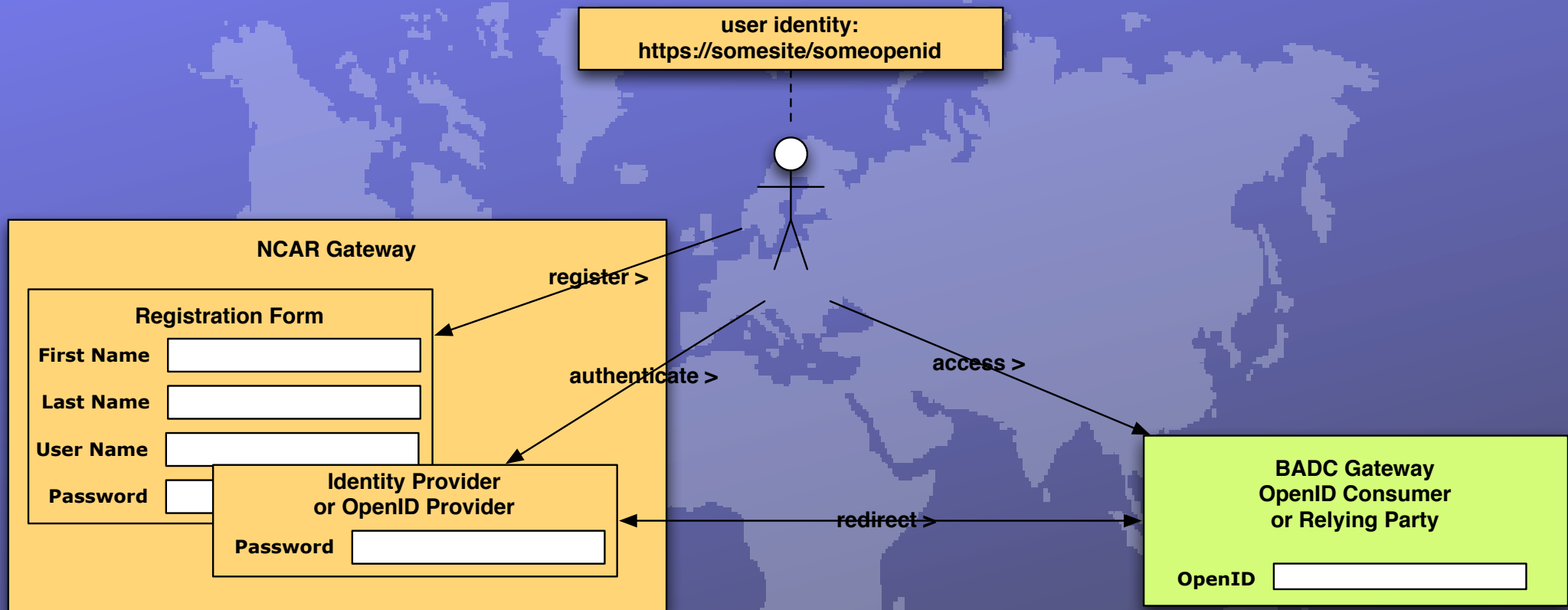


# Federation Services

- Current Federation Services :
  - Single Sign On
  - Attributes Exchange
  - Metadata Exchange
- Possible Future Federation Services :
  - Global Registry for Gateways, Data Nodes, Data Services
  - Global Monitoring
  - Workflow Services



# Single Sign On via OpenID

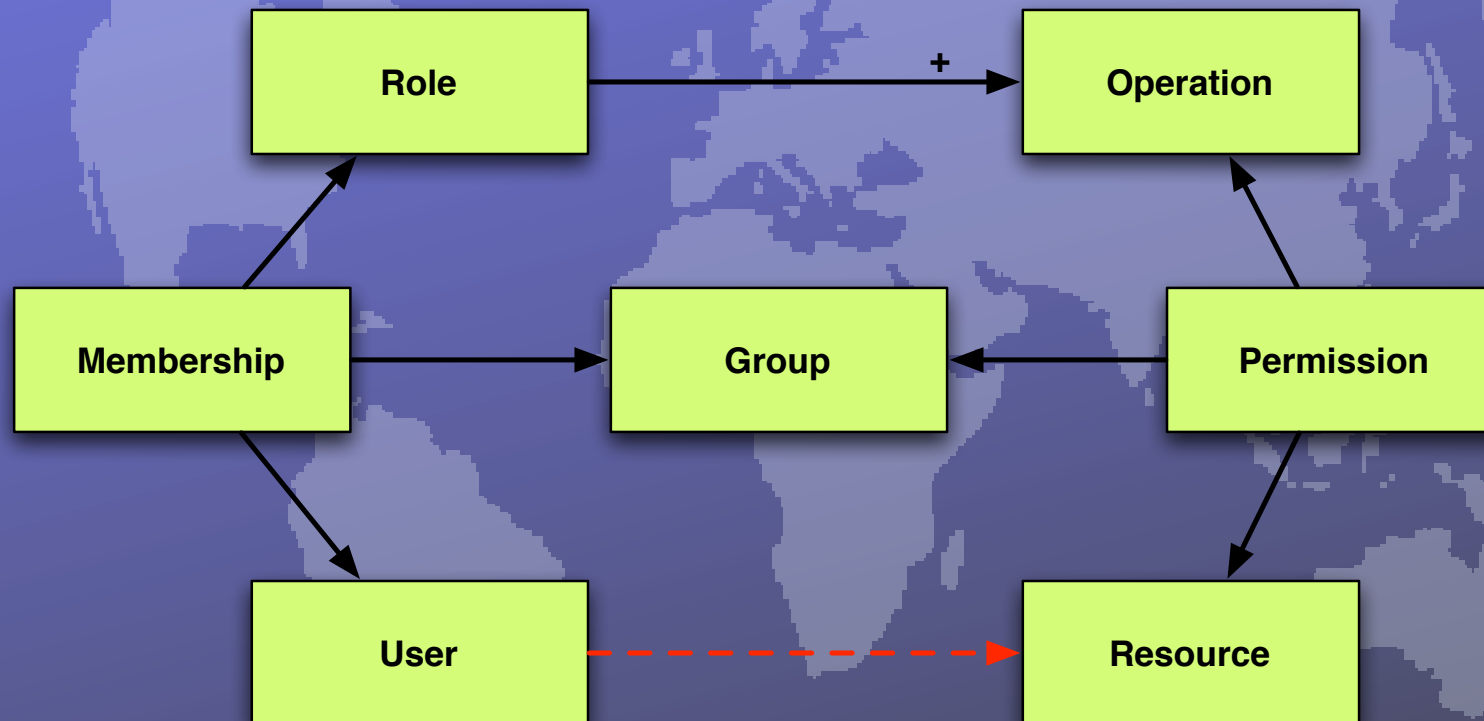


ESG Gateway: OpenID Consumer + OpenID Provider



# ESG Access Control Model

- Users belong to Groups
- Resources are restricted to Groups



- Groups are controlled by Gateways



# Gateway UIs for Access Control Management

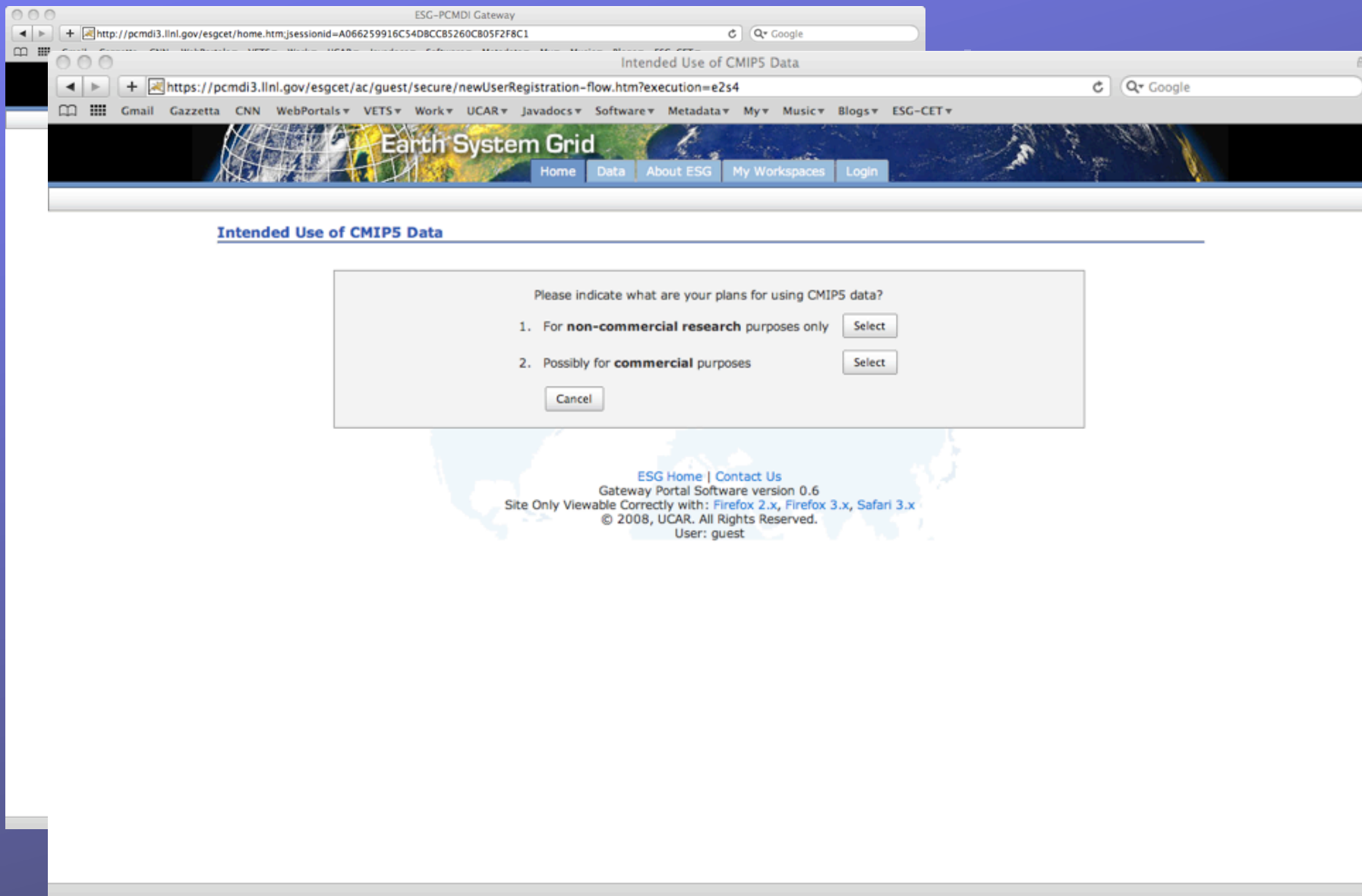
---



# Gateway UIs for Access Control Management

The screenshot displays the ESG-PCMDI Gateway web application. At the top, a navigation bar includes links for Home, Data, About ESG, My Workspaces, and Login. Below this, a banner reads "ESG Gateway hosted by the Program for Climate Model Diagnosis and Intercomparison". The main content area features a "Welcome to PCMDI" section with a logo and text describing the program's mission. To the left, a sidebar titled "ESG Data Gateways" lists links for NCAR Gateway, PCMDI Gateway, and Quick Links. The central area contains a "Quick Data Search" box with a search input field and a "Go" button. Below the search box, there are tabs for "Browse by Project", "Browse by Experiment", and "Browse by Topic". The "Browse by Project" tab is active, showing a list of climate research institutions and models, including Beijing Climate Center, BCCR, CCSM, and others. At the bottom, a footer provides contact information, software version (0.6), and copyright details (© 2008, UCAR).

# Gateway UIs for Access Control Management



The screenshot displays a web browser window titled "ESG-PCMDI Gateway" with the URL <http://pcmdi3.llnl.gov/esgcat/home.htm?sessionId=A066259916C54D8CC85260CB05F2F8C1>. The browser's address bar shows the current page is <https://pcmdi3.llnl.gov/esgcat/ac/guest/secure/newUserRegistration-flow.htm?execution=e2s4>. The page features a navigation bar with links: Home, Data, About ESG, My Workspaces, and Login. The main content area is titled "Intended Use of CMIP5 Data" and contains a form asking the user to indicate their plans for using CMIP5 data. The form has two radio button options: "1. For non-commercial research purposes only" and "2. Possibly for commercial purposes", each with a "Select" button. A "Cancel" button is also present. At the bottom of the page, there is a footer with links to "ESG Home" and "Contact Us", the text "Gateway Portal Software version 0.6", a note about browser compatibility ("Site Only Viewable Correctly with: Firefox 2.x, Firefox 3.x, Safari 3.x"), copyright information ("© 2008, UCAR. All Rights Reserved."), and the user identity "User: guest".

ESG-PCMDI Gateway

Intended Use of CMIP5 Data

Please indicate what are your plans for using CMIP5 data?

1. For **non-commercial research** purposes only
2. Possibly for **commercial** purposes

[ESG Home](#) | [Contact Us](#)  
Gateway Portal Software version 0.6  
Site Only Viewable Correctly with: [Firefox 2.x](#), [Firefox 3.x](#), [Safari 3.x](#)  
© 2008, UCAR. All Rights Reserved.  
User: guest

# Gateway UIs for Access Control Management

The screenshot displays a web browser window titled "ESG-PCMDI Gateway" with the URL <http://pcmdi3.llnl.gov/esgct/home.htm?sessionId=A066259916C54D8CC85260C805F2F8C1>. The browser's address bar shows the URL for the "Intended Use of CMIP5 Data" page: <https://pcmdi3.llnl.gov/esgct/ac/guest/secure/newUserRegistration-flow.htm?execution=e2s4>. The page title is "User Registration: CMIP5 Research membership".

The page features a navigation bar with links: Home, Data, About ESG, My Workspaces, and Login. Below the navigation bar is a banner with the "Earth System Grid" logo and a navigation menu: Home, Data, About ESG, My Workspaces, and Login.

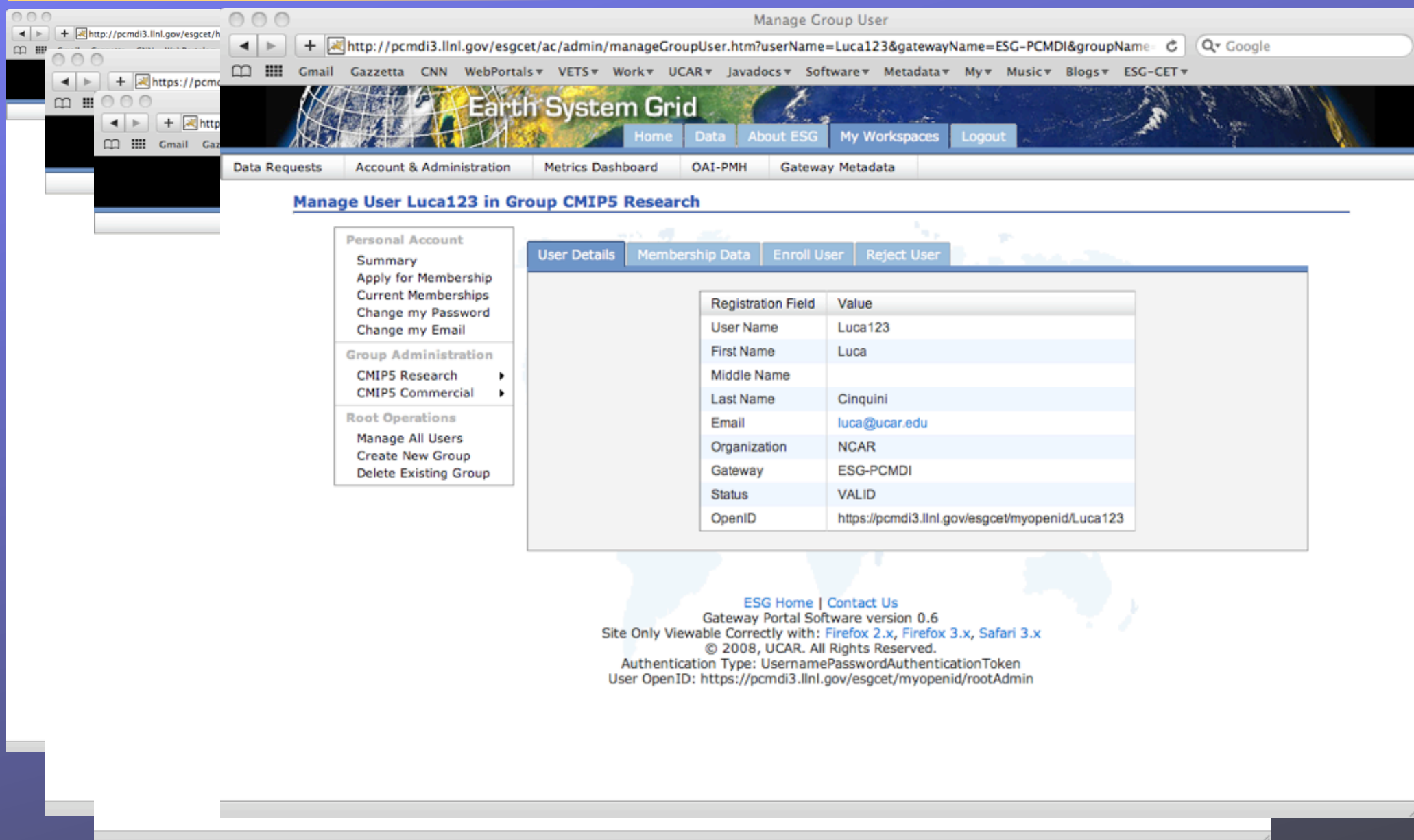
The main content area is titled "User Registration: CMIP5 Research membership". It contains a form for registration with the following fields and instructions:

- CMIP5 Statement of Work**: A text area containing the text "Fighting Global Warming".
- Terms of Use for Research Purposes Only**: A section with the heading "CMIP5 data Terms of Use for Research Purposes Only". The text reads: "These data are for use in research projects only. A 'research project' is any project carried out by an individual or organized by a university, a scientific institute, or similar organization (private or public) for non-commercial research purposes only. Results based on these data must be submitted for publication in the open literature".
- Acceptance**: A section with the text "I accept the Terms of Use : ☒ I Accept ☐ I Do NOT Accept".
- Buttons**: "Cancel" and "Subscribe" buttons.

At the bottom of the page, there is a footer with the following text:

ESG Home | Contact Us  
 Gateway Portal Software version 0.6  
 Site Only Viewable Correctly with: Firefox 2.x, Firefox 3.x, Safari 3.x  
 © 2008, UCAR. All Rights Reserved.  
 User: guest

# Gateway UIs for Access Control Management



Manage Group User

http://pcmdi3.llnl.gov/esgcat/ac/admin/manageGroupUser.htm?userName=Luca123&gatewayName=ESG-PCMDI&groupName=CMIP5 Research

Earth System Grid

Home Data About ESG My Workspaces Logout

Data Requests Account & Administration Metrics Dashboard OAI-PMH Gateway Metadata

### Manage User Luca123 in Group CMIP5 Research

**Personal Account**

- Summary
- Apply for Membership
- Current Memberships
- Change my Password
- Change my Email

**Group Administration**

- CMIP5 Research ▶
- CMIP5 Commercial ▶

**Root Operations**

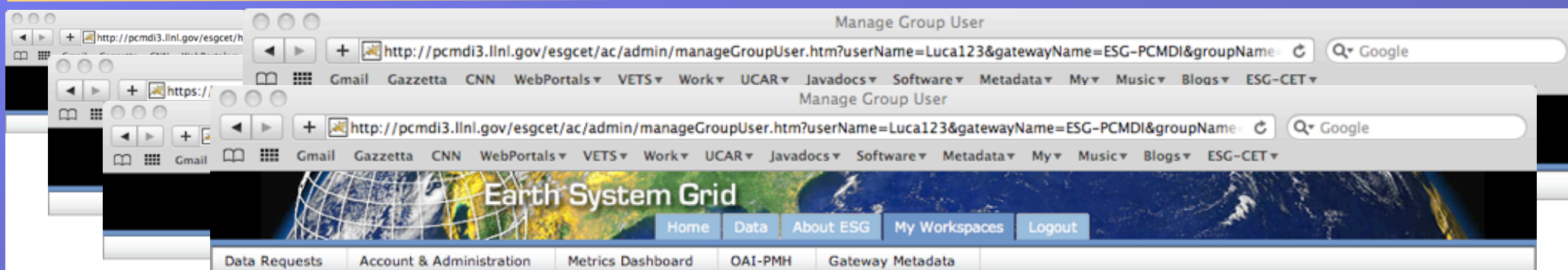
- Manage All Users
- Create New Group
- Delete Existing Group

User Details Membership Data Enroll User Reject User

Registration Field	Value
User Name	Luca123
First Name	Luca
Middle Name	
Last Name	Cinquini
Email	<a href="mailto:luca@ucar.edu">luca@ucar.edu</a>
Organization	NCAR
Gateway	ESG-PCMDI
Status	VALID
OpenID	<a href="https://pcmdi3.llnl.gov/esgcat/myopenid/Luca123">https://pcmdi3.llnl.gov/esgcat/myopenid/Luca123</a>

[ESG Home](#) | [Contact Us](#)  
Gateway Portal Software version 0.6  
Site Only Viewable Correctly with: [Firefox 2.x](#), [Firefox 3.x](#), [Safari 3.x](#)  
© 2008, UCAR. All Rights Reserved.  
Authentication Type: UsernamePasswordAuthenticationToken  
User OpenID: <https://pcmdi3.llnl.gov/esgcat/myopenid/rootAdmin>

# Gateway UIs for Access Control Management



## Manage User Luca123 in Group CMIP5 Research

Personal Account	User Details	Membership Data	Enroll User	Reject User						
<a href="#">Summary</a> <a href="#">Apply for Membership</a> <a href="#">Current Memberships</a> <a href="#">Change my Password</a> <a href="#">Change my Email</a>	<p>Assign special roles (if any) to the user (the default roles for this group are pre-selected).</p> <table border="1"><thead><tr><th>Special Roles</th><th>Optional Administrator Message</th></tr></thead><tbody><tr><td><input checked="" type="checkbox"/> Data Publisher</td><td rowspan="3"><div>Welcome.</div></td></tr><tr><td><input type="checkbox"/> Group Administrator</td></tr><tr><td><input type="checkbox"/> Super User</td></tr></tbody></table> <div>Submit</div>				Special Roles	Optional Administrator Message	<input checked="" type="checkbox"/> Data Publisher	<div>Welcome.</div>	<input type="checkbox"/> Group Administrator	<input type="checkbox"/> Super User
Special Roles	Optional Administrator Message									
<input checked="" type="checkbox"/> Data Publisher	<div>Welcome.</div>									
<input type="checkbox"/> Group Administrator										
<input type="checkbox"/> Super User										

[ESG Home](#) | [Contact Us](#)

Gateway Portal Software version 0.6

Site Only Viewable Correctly with: [Firefox 2.x](#), [Firefox 3.x](#), [Safari 3.x](#)

© 2008, UCAR. All Rights Reserved.

Authentication Type: UsernamePasswordAuthenticationToken

User OpenID: <https://pcmdi3.llnl.gov/esgcat/myopenid/rootAdmin>

# Gateway UIs for Access Control Management

The screenshot displays a web browser window with multiple tabs. The active tab is titled 'Manage Group User' and shows the URL: `http://pcmdi3.llnl.gov/esgcat/ac/admin/manageGroupUser.htm?userName=Luca123&gatewayName=ESG-PCMDI&groupName=`. The browser's address bar also shows the URL. The page content includes a navigation menu with links like 'Home', 'Data', 'About ESG', 'My Workspaces', and 'Logout'. Below the navigation menu, there is a section titled 'Manage Users for Group CMIP5 Research'. This section contains a sidebar with links for 'Personal Account', 'Group Administration', and 'Root Operations'. The main content area is titled 'Manage Current Users' and includes a table of users. The table has columns for Last Name, First Name, User Name, Email Address, Gateway, and Status. The table lists 18 users, including Admin, Cinquini, Wang, Pascoe, Nikonov, Antony, Drach, El Zein, Ward, Cayanan, Potter, Drach, Bell, Williams, and Cinquini. The table is paginated, showing 1 user per page. A 'View User Details' button is located at the bottom of the table.

**Manage Current Users**  
Select a current user by clicking on a table row, then click the View User Details button.

<< first 1 last >> Show 20 per page  
Click on any column to sort.

Last Name	First Name	User Name	Email Address	Gateway	Status
Admin	Pcmdi	rootAdmin	drach@llnl.gov	ESG-PCMDI	Enrolled
Cinquini	Luca	Luca456	cinquiniluca@gmail.com	ESG-PCMDI	Enrolled
Cinquini	Luca	Luca123	luca@ucar.edu	ESG-PCMDI	Enrolled
Wang	Feiyi	fwang2	fwang2@ornl.gov	ESG-PCMDI	Enrolled
Pascoe	Stephen	spascoe	Stephen.Pascoe@stfc.ac.uk	ESG-PCMDI	Enrolled
Nikonov	Sergey	snikonov	Serguei.Nikonov@noaa.gov	ESG-PCMDI	Enrolled
Antony	Joseph	jxa900	jxa900@anusf.anu.edu.au	ESG-PCMDI	Enrolled
Drach	Robert	drach1	drach1@llnl.gov	ESG-PCMDI	Enrolled
El Zein	Ahmed	aez900	ahmed.elzein@anu.edu.au	ESG-PCMDI	Enrolled
Ward	Craig	c.ward	cward@SI.EDU	ESG-PCMDI	Enrolled
Cayanan	Michael	jplcdx	michael.cayanan@jpl.nasa.gov	ESG-PCMDI	Enrolled
Potter	Gerald	glpotter	jpotter@ucdavis.edu	ESG-PCMDI	Enrolled
Drach	Bob	Robert S. Drach 410015	drach@llnl.gov	ESG-PCMDI	Enrolled
Bell	Gavin	bell51	gavin@llnl.gov	ESG-PCMDI	Enrolled
Williams	Dean	Dean N. Williams 653767	williams13@llnl.gov	ESG-PCMDI	Enrolled
Cinquini	Luca	LucaFromNcar	luca@ucar.edu	ESG-NCAR	Enrolled

<< first 1 last >> Show 20 per page  
View User Details

ESG Home | Contact Us  
Gateway Portal Software version 0.6  
Site Only Viewable Smoothly with Firefox 3.0, Firefox 3.0, Safari 3.0

# Gateway UIs for Access Control Management

The screenshot displays a web browser window with multiple tabs. The active tab is titled "Manage Group User" and shows the URL: `http://pcmdi3.llnl.gov/esgcat/ac/admin/manageGroupUser.htm?userName=Luca123&gatewayName=ESG-PCMDI&groupName=`. The browser's address bar also shows the URL: `http://pcmdi3.llnl.gov/esgcat/ac/admin/listGroupUsers.htm?status=3&groupName=CMIP5+Research`.

The main content area is titled "Manage Users for Group CMIP5 Research". It features a sidebar on the left with navigation links: "Personal Account" (Summary, Apply for Membership, Current Memberships, Change my Password, Change my Email), "Group Administration" (CMIP5 Research, CMIP5 Commercial), and "Root Operations" (Manage All Users, Create New Group, Delete Existing Group).

The main content area is titled "Manage Current Users" and includes a table of users. The table has columns: Last Name, First Name, User Name, Email Address, Gateway, and Status. The table is sorted by "User Name" and shows 20 users per page. The user "Luca From Ncar" is highlighted with a red box.

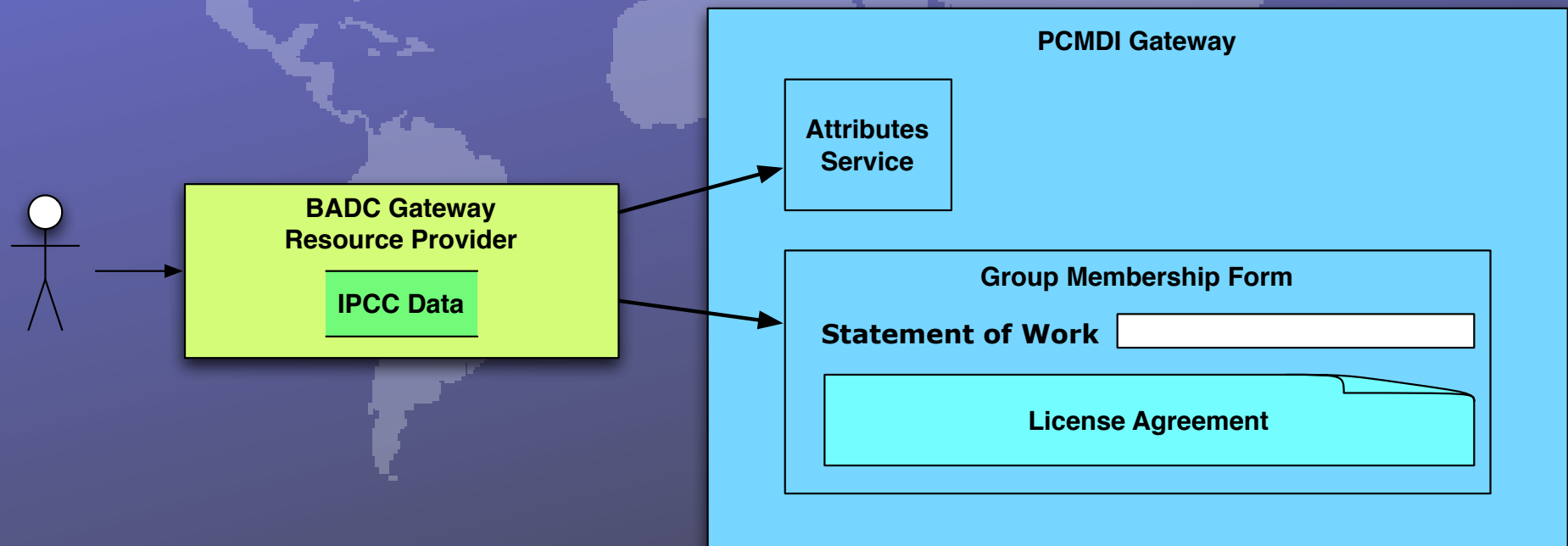
Last Name	First Name	User Name	Email Address	Gateway	Status
Admin	Pcmdi	rootAdmin	drach@llnl.gov	ESG-PCMDI	Enrolled
Cinquini	Luca	Luca456	cinquiniluca@gmail.com	ESG-PCMDI	Enrolled
Cinquini	Luca	Luca123	luca@ucar.edu	ESG-PCMDI	Enrolled
Wang	Feiyi	fwang2	fwang2@ornl.gov	ESG-PCMDI	Enrolled
Pascoe	Stephen	spascoe	Stephen.Pascoe@stfc.ac.uk	ESG-PCMDI	Enrolled
Nikonov	Sergey	snikonov	Serguei.Nikonov@noaa.gov	ESG-PCMDI	Enrolled
Antony	Joseph	jxa900	jxa900@anusf.anu.edu.au	ESG-PCMDI	Enrolled
Drach	Robert	drach1	drach1@llnl.gov	ESG-PCMDI	Enrolled
El Zein	Ahmed	aez900	ahmed.elzein@anu.edu.au	ESG-PCMDI	Enrolled
Ward	Craig	c.ward	cward@SI.EDU	ESG-PCMDI	Enrolled
Cayanan	Michael	jplcdx	michael.cayanan@jpl.nasa.gov	ESG-PCMDI	Enrolled
Potter	Gerald	glpotter	jpotter@ucdavis.edu	ESG-PCMDI	Enrolled
Drach	Bob	Robert S. Drach 410015	drach@llnl.gov	ESG-PCMDI	Enrolled
Bell	Gavin	bell51	gavin@llnl.gov	ESG-PCMDI	Enrolled
Williams	Dean	Dean N. Williams 653767	williams13@llnl.gov	ESG-PCMDI	Enrolled
Cinquini	Luca	LucaFromNcar	luca@ucar.edu	ESG-NCAR	Enrolled

At the bottom of the page, there is a footer with links: "ESG Home | Contact Us" and "Gateway Portal Software version 0.6".



# SAML Attributes Service

- Secure Web Service used to request user information:
  - Limited personal information (first/last name, email)
  - Access control attributes
- SAML: Security Assertion Markup Language



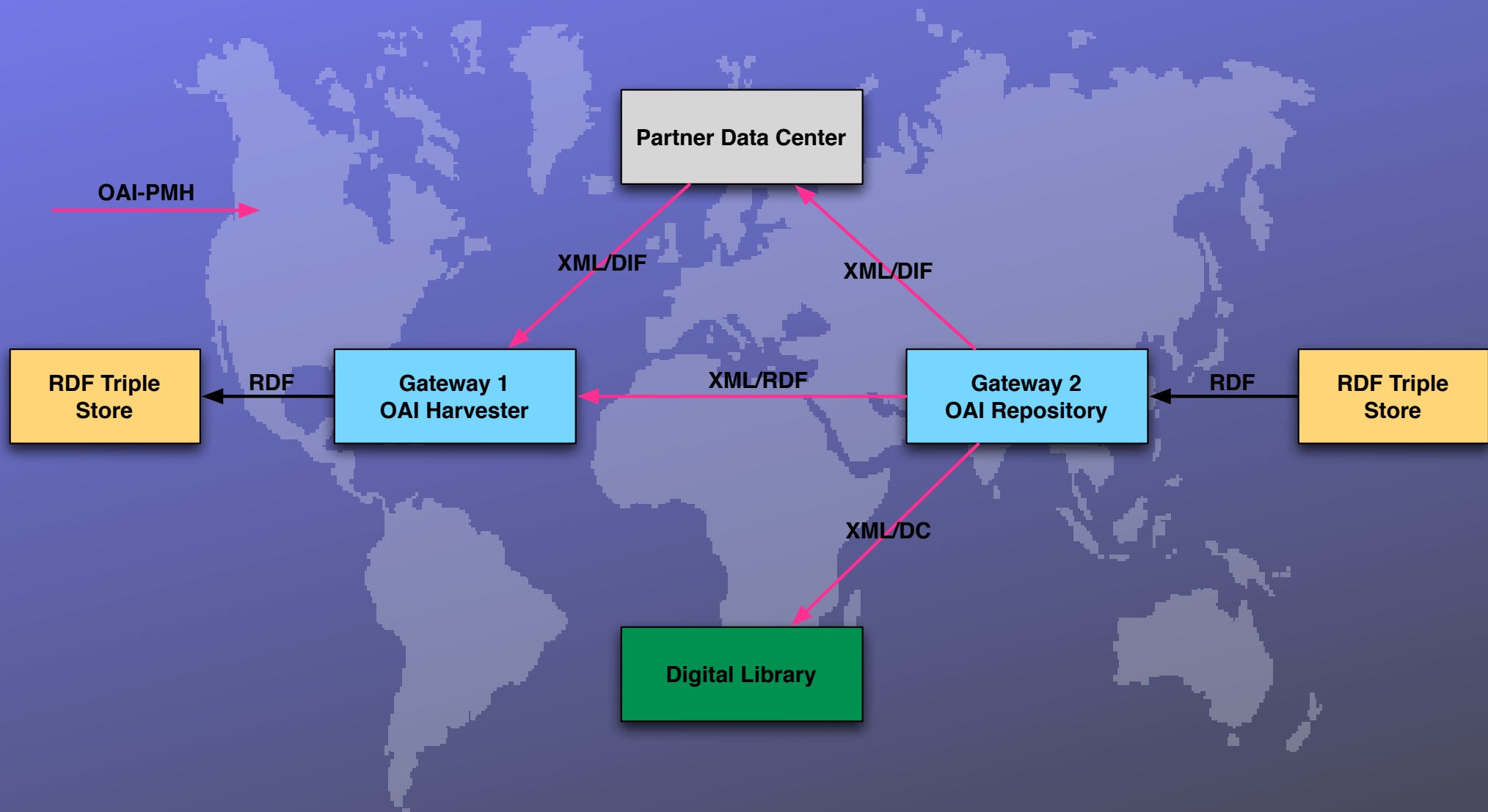


# Metadata Exchange via OAI-PMH

- Metadata exchange enables federation-wide search
- Open Archive Initiative - Protocol for Metadata Harvesting
  - Client (OAI Harvester) - Server (OAI Repository)
  - Metadata records are encoded in XML format
  - 6 verbs: Identify, ListMetadataFormats, ListSets, ListIdentifiers, ListRecords, GetRecord
- ESG Gateway: OAI Harvester + OAI Repository
  - Import/Export to/from RDF triple store
  - Metadata formats: RDF, DIF, DC



# ESG Gateway as OAI Harvester & Repository





# Example: Gateway OAI Administrative Interface

---





Earth System Grid

# Example: Gateway OAI Administrative Interface

OAI Administrator Harvesting Interface

http://pcmdi3.llnl.gov/esgcat/oai/admin/getRecords.htm

Gmail Gazzetta CNN WebPortals VETS Work UCAR Javadocs Software Metadata My Music Blogs ESG-CET

Earth System Grid

Home Data About ESG My Workspaces Logout

### OAI Administrator Harvesting Interface

Use the form below to harvest metadata records from a selected OAI-PMH repository.

Repository:   List of the available metadata formats for the selected repository.

Start Date:   Defaults to last harvested date & time or some time in the past if there was no last harvest. Leave blank to not use a start date constraint.  
☐ Do not use a Start Date.

End Date:   Defaults to current date & time. Leave blank to not use an end date constraint.  
☐ Do not use an End Date.

Max # of Records:

[ESG Home](#) | [Contact Us](#)  
Gateway Portal Software version 0.6  
Site Only Viewable Correctly with: [Firefox 2.x](#), [Firefox 3.x](#), [Safari 3.x](#)  
© 2008, UCAR. All Rights Reserved.  
Authentication Type: UsernamePasswordAuthenticationToken  
User OpenID: <https://pcmdi3.llnl.gov/esgcat/myopenid/rootAdmin>

# Example: Gateway OAI Administrative Interface

**OAI Administrator Harvesting Interface**

Use the form below to harvest metadata records from a selected OAI-PMH repository.

Repository:   List of the available metadata formats for the selected repository.

Start Date:   Defaults to last harvested date & time or some time in the past if there was no last harvest. Leave blank to not use a start date constraint.  
☐ Do not use a Start Date.

End Date:   Defaults to current date & time. Leave blank to not use an end date constraint.  
☐ Do not use an End Date.

Max # of Records:

---

**Harvesting Log**

Harvester Gateway	Repository Gateway	Harvesting Date	From Date	Until Date	# of Records Requested	# of Records Processed	# of Records Inserted	# of Records Skipped	# of Records Deleted	Status	# of Records with Errors
ESG-PCMDI	ESG-NCAR	2009/10/02 15:05GMT			100	104	100	4	0	DONE	0

ESG Home | Contact Us  
 Gateway Portal Software version 0.6  
 Site Only Viewable Correctly with: [Firefox 2.x](#), [Firefox 3.x](#), [Safari 3.x](#)  
 © 2008, UCAR. All Rights Reserved.  
 Authentication Type: UsernamePasswordAuthenticationToken  
 User OpenID: <https://pcmdi3.llnl.gov/esgct/myopenid/rootAdmin>

# Example: Gateway Faceted Search #1

The screenshot displays the Earth System Grid (ESG) Advanced Search interface. The browser address bar shows the URL: <http://pcmdi3.llnl.gov/esgcat/query/advanced.htm>. The page features a navigation bar with links: Home, Data, About ESG, My Workspaces, and Logout. Below the navigation bar, the "Advanced Search" section includes a "Search For:" dropdown menu with options: Datasets, Models, Model Components, Simulations, and Software Tools. A "Search Categories" section allows users to select from Project, Model, Variable, and Discipline. The "Selected Option:" section shows three active filters: Project (CCSM, NARCCAP, Test), Variable (air pressure at sea level, air temperature, atmosphere boundary layer thickn, atmosphere water vapor content, cloud area fraction), and Model (CRCM, ECPC/RSM, HRM3, MMS1, RCM3). A "Free Text" search bar is also present. The results section shows a total of 26 results, with the first 10 displayed. Each result includes a checkbox, a link to the data, and the authorization information (Guest Users, Gateway: ESG-NCAR).

**Advanced Search**

Search For: ☐ Datasets ☐ Models ☐ Model Components ☐ Simulations ☐ Software Tools [Instructions](#)

**Search Categories**

**Selected Option:**

**Project**

- CCSM
- NARCCAP
- Test

**Variable**

- air pressure at sea level
- air temperature
- atmosphere boundary layer thickn
- atmosphere water vapor content
- cloud area fraction

**Model**

- CRCM
- ECPC/RSM
- HRM3
- MMS1
- RCM3

**Free Text**   Results per Page

**Total Number of Results: 26**  
1-10 of 26 results | 11-20 | 21-26

- ☐ [NARCCAP CRCM, CGCM3 Boundary Conditions, Current Scenario, Maximum Daily Surface Air Temperature Files](#)  
Authorization: Guest Users  
Gateway: ESG-NCAR
- ☐ [NARCCAP CRCM, CGCM3 Boundary Conditions, Current Scenario, Minimum Daily Surface Air Temperature Files](#)  
Authorization: Guest Users  
Gateway: ESG-NCAR
- ☐ [NARCCAP CRCM, CGCM3 Boundary Conditions, Current Scenario, Surface Air Temperature Files](#)  
Authorization: Guest Users  
Gateway: ESG-NCAR
- ☐ [NARCCAP CRCM, CGCM3 Boundary Conditions, Future Scenario, Maximum Daily Surface Air Temperature Files](#)  
Authorization: Guest Users  
Gateway: ESG-NCAR
- ☐ [NARCCAP CRCM, CGCM3 Boundary Conditions, Future Scenario, Minimum Daily Surface Air Temperature Files](#)  
Authorization: Guest Users  
Gateway: ESG-NCAR
- ☐ [NARCCAP CRCM, CGCM3 Boundary Conditions, Future Scenario, Surface Air Temperature Files](#)  
Authorization: Guest Users  
Gateway: ESG-NCAR
- ☐ [NARCCAP CRCM, NCEP Boundary Conditions, Maximum Daily Surface Air Temperature Files](#)  
Authorization: Guest Users  
Gateway: ESG-NCAR
- ☐ [NARCCAP CRCM, NCEP Boundary Conditions, Minimum Daily Surface Air Temperature Files](#)  
Authorization: Guest Users  
Gateway: ESG-NCAR
- ☐ [NARCCAP CRCM, NCEP Boundary Conditions, air\\_temperature Files](#)  
Authorization: Guest Users  
Gateway: ESG-NCAR
- ☐ [NARCCAP ECPC, NCEP Boundary Conditions, Maximum Daily Surface Air Temperature Files](#)  
Authorization: Guest Users  
Gateway: ESG-NCAR

ESG Home | Contact Us

# Example: Gateway Faceted Search #2

CADIS Advanced Search

http://cadis.prototype.ucar.edu/query/advanced.htm

Gmail Gazzetta CNN WebPortals VETS Work UCAR Javadocs Software Metadata My Music Blogs ESG-CET

Cooperative Arctic Data and Information Service  
of the ARCTIC OBSERVING NETWORK

**CADIS**

AON

Search in CADIS

Logged in as Master CADIS Root | Logout

CADIS Home Contribute [meta]data Search for data Browse data by Discipline Browse data by PI Browse data by AON Project Visualization tools About CADIS Contact us

## Advanced Search

**Geographic Bounding Box**

90 N

W -180 180 E

-90 S

**Dates**

Start: Stop: yyyy-mm-dd (GMT)

**Location**

-- Any --

Arctic Ocean

Arctic Ocean > Beaufort Sea

Arctic Ocean > Chukchi Sea

Continent > Africa

**Principal Investigator**

-- Any --

A. L. Yanshin

A.s. Huijzer

Aldar P. Gorbunov

Alexandr E Nemov

**Instrument**

-- Any --

2DC

ADCP

AERS

AMSR-E

**Platform**

-- Any --

Aircraft

Automated Surface Observing System

Automatic Remote Weather Station

Drifting Buoy

**Variable**

-- Any --

Agriculture > Soils

Atmosphere > Altitude > Tropopause

Atmosphere > Atmospheric Chemistry > Trace Gases/Trace Species

Atmosphere > Atmospheric Pressure > Surface Pressure

**Project**

-- Any --

A Modular Approach to Building an Arctic Observing System for the IPY and Beyond in the Switchyard Region of the Arctic Ocean

A Prototype Network for Measuring Arctic Winter Precipitation and Snow Cover (Snow-Net)

ARCSS/GISP2

ARCSS/LAI/FLUX

**Data Center**

-- Any --

CADIS

NSIDC

NSIDC\_ARCSS

NSIDC\_DAAC



# Conclusions: how to join the ESG federation

- Option #1: setup Data Node
  - Store and serves data locally, publish to external Gateway
  - Retain control of data, uses Gateway high level services
- Option #2: setup Gateway
  - Responsible for serving a specific scientific community
  - Expose personal identity
- Option #3: implement Federation Services
  - OpenID Provider/Consumer, SAML Attribute Service, OAI Repository/Harvester



Thank you. Questions ?